

# Notice of Allowability

Application No.

10/776,170

Examiner

Edan Orgad

Applicant(s)

HAKKINEN ET AL.

Art Unit

2684

## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 3/15/04.
2. ☒ The allowed claim(s) is/are 1-67.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 6/24/05
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 10/31/05
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

## DETAILED ACTION

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Alicia Choi on 10/31/05.

Claims 1, 6, 17, 22, 32, 37, 42, 48, 54 and 61 have been amended as follows:

1. (currently amended) A method for controlling transmit power in a mobile device in a network comprising:

detecting control information from a network node during a control channel sub-frame intended for a mobile device;

transmitting a negative acknowledge signal in a slot allocated to feedback information in a ~~a~~an uplink channel sub-frame immediately preceding a ~~a~~an uplink channel sub-frame defined for an acknowledge (ACK) signal or a negative acknowledge (NAK) signal transmission for downlink channel data associated with ~~said~~the control information if no ACK signal or NACK signal ~~was~~is transmitted in a slot allocated to the feedback information in a ~~a~~the uplink channel sub-frame as a result of a feedback information process from a control channel sub-frame preceding ~~said~~the control channel sub-frame;

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receiving ~~said~~the downlink channel data indicated by the control information at the mobile device and transmitting ~~an~~the ACK signal or the NACK signal in accordance with appropriate receipt of ~~said~~the downlink channel data; and

determining if the control information intended for the mobile device is detected in a next valid control channel sub-frame following a sub-frame in which the control information intended for the mobile device ~~was~~is detected, and if not, transmitting ~~a~~the NACK signal in ~~a~~the slot allocated to the feedback information in ~~a~~the uplink channel sub-frame corresponding to the next valid control channel sub-frame.

6. (currently amended) The method according to claim 1, further comprising determining if a specific situation exists and if so, determining if the control information intended for the mobile device is detected in a next valid control channel sub-frame, and if not, transmitting ~~a~~the NACK signal in ~~a~~the slot allocated to the feedback information in ~~a~~the uplink channel sub-frame corresponding to the next valid control channel sub-frame.

17. (currently amended) A method for controlling transmit power in a mobile device in a network comprising:

detecting control information from a network node intended for a mobile device during a control channel sub-frame;

determining if an  $N\_acknack\_transmit$  value  $> 1$ , and if so, transmitting a negative acknowledge signal (NACK) in two slots allocated to feedback information in two preceding uplink channel sub-frames immediately preceding ~~a~~an uplink channel sub-frame defined for an

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acknowledgement transmission for downlink channel data associated with the control information if no acknowledgement transmission occurred in slots as a result of a feedback information process from a preceding control channel sub-frame immediately preceding ~~said~~the control channel sub-frame or ~~a~~the control channel sub-frame preceding ~~said~~the preceding control channel sub-frame;

receiving ~~said~~the downlink channel data indicated by the control information at the mobile device and transmitting an ACK signal or the NACK signal in accordance with appropriate receipt of ~~said~~the downlink channel data; and

determining if the control information intended for the mobile device is detected in a next valid control channel sub-frame following a sub-frame in which the control information intended for the mobile device ~~was~~is detected, and if not, transmitting ~~a~~the NACK signal in a slot allocated to the feedback information in each of N\_acknack\_transmit sub-frames starting in the uplink channel sub-frame corresponding to the next valid control channel sub-frame.

22. (currently amended) The method according to claim 17, further comprising determining if a specific situation exists and if so determining if a DTX mode signal =1, and if so, determining if the control information intended for the mobile device is detected in a next valid control channel sub-frame following ~~a~~the sub-frame in which the control information intended for the mobile device ~~was~~is detected, and if so, transmitting ~~the~~ athe NACK signal in ~~a~~the slot allocated to the feedback information in each of N\_acknack\_transmit sub-frames starting in the uplink channel sub-frame corresponding to the next valid control channel sub-frame.

32. (currently amended) A system for controlling transmit power ~~in a mobile device~~ in a network comprising:

a network ~~node~~device, the network device operatively connected to the network and sending control information in sub-frames of a control channel and associated data in the sub-frames of a downlink channel to at least one mobile device; and

a mobile device, the mobile device operatively connected to the network and detecting control information during a control channel sub-frame intended for the mobile device and performing:

transmitting to the network ~~node~~device a negative acknowledge signal in a slot allocated to feedback information in ~~a~~an uplink channel sub-frame immediately preceding ~~a~~an uplink channel sub-frame defined for an acknowledge (ACK) signal or a negative acknowledge (NAK) signal transmission for downlink channel data associated with ~~said~~the control information if no ACK signal or NACK signal ~~was~~is transmitted in ~~a~~the slot allocated to the feedback information in ~~a~~the uplink channel sub-frame as a result of a feedback information process from a control channel sub-frame preceding ~~said~~the control channel sub-frame;

receiving ~~said~~the downlink channel data indicated by the control information at the mobile device and transmitting ~~an~~the ACK signal or the NACK signal in accordance with appropriate receipt of ~~said~~the downlink channel data to the network node; and

determining if the control information intended for the mobile device is detected in a next valid control channel sub-frame following a sub-frame in which the control information intended for the mobile device ~~was~~is detected, and if not, transmitting ~~a~~the NACK signal to the network

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node in ~~a~~the slot allocated to the feedback information in ~~a~~the uplink channel sub-frame corresponding to the next valid control channel sub-frame.

37. (currently amended) A system for controlling transmit power ~~in a mobile device~~ in a network comprising:

a network ~~node~~device, the network device operatively connected to the network and sending control information in sub-frames of a control channel and associated data in sub-frames of a downlink channel to at least one mobile device; and

a mobile device, the mobile device operatively connected to the network and detecting control information from ~~a~~the network ~~node~~device intended for ~~a~~the mobile device during a control channel sub-frame and performing:

determining if an  $N\_acknack\_transmit$  value  $> 1$ , and if so, transmitting a negative acknowledge signal (NACK) in two slots allocated to feedback information in two preceding uplink channel sub-frames immediately preceding ~~a~~an uplink channel sub-frame defined for an acknowledgement transmission for downlink channel data associated with the control information if no acknowledgement transmission occurred in slots as a result of a feedback information process from a preceding control channel sub-frame immediately preceding said control channel sub-frame or ~~a~~the control channel sub-frame preceding said preceding control channel sub-frame;

receiving said downlink channel data indicated by the control information at the mobile device and transmitting an ACK signal or the NACK signal in accordance with appropriate receipt of said downlink channel data; and

determining if the control information intended for the mobile device is detected in a next valid control channel sub-frame following a sub-frame in which the control information intended for the mobile device ~~was~~is detected, and if not, transmitting ~~a~~the NACK signal in a slot allocated to the feedback information in each of N\_acknack\_transmit sub-frames starting in the uplink channel sub-frame corresponding to the next valid control channel sub-frame.

42. (currently amended) A mobile device containing a storage medium with instructions stored therein, the instructions when executed causing the mobile device to perform:

detecting control information from a network node during a control channel sub-frame intended for a mobile device;

transmitting a negative acknowledge signal in a slot allocated to feedback information in ~~a~~an uplink channel sub-frame immediately preceding ~~a~~an uplink channel sub-frame defined for an acknowledge (ACK) signal or a negative acknowledge (NAK) signal transmission for downlink channel data associated with ~~said~~the control information if no ACK signal or NACK signal ~~was~~is transmitted in a slot allocated to the feedback information in ~~a~~the uplink channel sub-frame as a result of a feedback information process from a control channel sub-frame preceding ~~said~~the control channel sub-frame;

receiving ~~said~~the downlink channel data indicated by the control information at the mobile device and transmitting ~~an~~the ACK signal or the NACK signal in accordance with appropriate receipt of ~~said~~the downlink channel data; and

determining if the control information intended for the mobile device is detected in a next valid control channel sub-frame following a sub-frame in which the control information intended

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for the mobile device ~~was~~is detected, and if not, transmitting ~~a~~the NACK signal in ~~a~~the slot allocated to the feedback information in ~~a~~the uplink channel sub-frame corresponding to the next valid control channel sub-frame.

48. (currently amended) A mobile device containing a storage medium with instructions stored therein, the instructions when executed causing the mobile device to perform:

detecting control information from a network node intended for a mobile device during a control channel sub-frame;

determining if an  $N\_acknack\_transmit$  value  $> 1$ , and if so, transmitting a negative acknowledge signal (NACK) in two slots allocated to feedback information in two preceding uplink channel sub-frames immediately preceding ~~a~~an uplink channel sub-frame defined for an acknowledgement transmission for downlink channel data associated with the control information if no acknowledgement transmission occurred in slots as a result of a feedback information process from a preceding control channel sub-frame immediately preceding ~~said~~the control channel sub-frame or ~~a~~the control channel sub-frame preceding ~~said~~the preceding control channel sub-frame;

receiving ~~said~~the downlink channel data indicated by the control information at the mobile device and transmitting an ACK signal or the NACK signal in accordance with appropriate receipt of ~~said~~the downlink channel data; and

determining if the control information intended for the mobile device is detected in a next valid control channel sub-frame following a sub-frame in which the control information intended for the mobile device ~~was~~is detected, and if not, transmitting ~~a~~the NACK signal in a slot



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allocated to the feedback information in each of N\_acknack\_transmit sub-frames starting in the uplink channel sub-frame corresponding to the next valid control channel sub-frame.

54. (currently amended) A network node containing a storage medium with instructions stored therein, the instructions when executed causing the network node to perform:

sending control information to a mobile device during a control channel sub-frame intended for the mobile device;

receiving a negative acknowledge signal from the mobile device in a slot allocated to feedback information in an uplink channel sub-frame immediately preceding ~~a~~an uplink channel sub-frame defined for an acknowledge (ACK) signal or a negative acknowledge (NAK) signal reception for downlink channel data associated with ~~said~~the control information;

transmitting ~~said~~the downlink channel data indicated by the control information to the mobile device and receiving ~~an~~the ACK signal or the NACK signal in accordance with appropriate receipt of ~~said~~the downlink channel data by ~~said~~the mobile device; and

receiving ~~a~~the NACK signal from the mobile device in ~~a~~the slot allocated to the feedback information in ~~a~~the uplink channel sub-frame corresponding to a next valid control channel sub-frame, if the mobile device determines that control information intended for the mobile device is not detected in the next valid control channel sub-frame following a sub-frame in which the control information intended for the mobile device ~~was~~is detected.

61. (currently amended) A network node containing a storage medium with instructions stored therein, the instructions when executed causing the network node to perform:

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sending control information intended for a mobile device during a control channel sub-frame;

receiving a negative acknowledge signal (NACK) from the mobile device in two slots allocated to feedback information in two preceding uplink channel sub-frames immediately preceding a an uplink channel sub-frame defined for an acknowledgement reception for downlink channel data associated with the control information if no acknowledgement reception occurred in slots as a result of a feedback information process from a preceding control channel sub-frame immediately preceding ~~said~~the control channel sub-frame or a ~~the~~ control channel sub-frame preceding ~~said~~the preceding control channel sub-frame and if an N\_acknack\_transmit value > 1;

transmitting the downlink channel data indicated by the control information to the mobile device and receiving an ACK signal or NACK signal in accordance with appropriate receipt of the downlink channel data by the mobile device; and

receiving a ~~a~~the NACK signal from the mobile device in a slot allocated to the feedback information in each of N\_acknack\_transmit sub-frames starting in the uplink channel sub-frame corresponding to a next valid control channel sub-frame if the mobile device determined that control information intended for the mobile device ~~was~~is not detected in a next valid control channel sub-frame following a ~~a~~the sub-frame in which the control information intended for the mobile device ~~was~~is detected.

***Allowable Subject Matter***

Claims 1-67 are allowed.

The following is an examiner's statement of reasons for allowance:

Regarding claims 1, 17, 32, 37, 42, 48, 54 and 61, it is well known in the art to have method and/or system for controlling transmit power in a network comprising: a network device, the network device operatively connected to the network and sending control information in sub-frames of a control channel and associated data in the sub-frames of a downlink channel to at least one mobile device; and a mobile device, the mobile device operatively connected to the network and detecting control information during a control channel sub-frame intended for the mobile device and performing: transmitting to the network -device\_a negative acknowledge signal in a slot allocated to feedback information in an uplink channel sub-frame immediately preceding an uplink channel sub-frame defined for an acknowledge (ACK) signal or a negative acknowledge (NAK) signal transmission for downlink channel data associated with the control information if no ACK signal or NACK signal is transmitted in the slot allocated to the feedback information in the uplink channel sub-frame as a result of a feedback information process from a control channel sub-frame preceding the control channel sub-frame (see Kim et al, US 2004/0058687, ¶ 0076, 0091 & Love et al, US 2004/0116143, ¶ 0062).

More specifically, other prior art cited, generally discloses a mobile communication system supporting a high-speed downlink packet access (HSDPA) scheme, and in particular, for acquiring a channel quality indicator. Also, in order to reduce power a mobile continues to transmit NACKS in every HS-DPCCH sub-frame after reception of a high-speed downlink

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shared channel (HS-DSCH) packet for a duration of a time. While the time was running, a network device would not have to offset its detection threshold, so an ACK power for any subsequent packets during this period could be much lower.

However, none of the prior cited, alone or in combination, disclose or provide the motivation to teach receiving a negative acknowledge signal from the mobile device in a slot allocated to feedback information in an uplink channel sub-frame immediately preceding an uplink channel sub-frame defined for an acknowledge (ACK) signal or a negative acknowledge (NAK) signal reception for downlink channel data associated with the control information; transmitting the downlink channel data indicated by the control information to the mobile device and receiving the ACK signal or the NACK signal in accordance with appropriate receipt of the downlink channel data by the mobile device; and receiving the NACK signal from the mobile device in the slot allocated to the feedback information in the uplink channel sub-frame corresponding to a next valid control channel sub-frame, if the mobile device determines that control information intended for the mobile device is not detected in the next valid control channel sub-frame following a sub-frame in which control information intended for the mobile device is detected.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 2005/0213575 teaches a method for performing compressed mode-based HARQ in a mobile communication system supporting HSDPA.

US 2005/0180384 teaches a system and method for providing additional channels to an existing communications device.

US 2004/0240400 teaches a method of real time hybrid ARQ.

US 2004/0223507 teaches an ACK/NACK determination reliability for a communication device.

US 2004/0203980 teaches a method for improving uplink control channel efficiency in a wireless communication system.

US 2004/0202147 teaches a method and apparatus for HS-DPCCH signalling with activity information in HSDPA.

US 2004/0116143 teaches a method and apparatus for providing a distributed architecture digital wireless communication system.

US 2004/0009767 teaches a radio link parameter updating method in mobile communication system.

US 2003/0228876 teaches a HSDPA CQI, ACK, NACK power offset known in node B and in SRNC.

US 2003/0189918 teaches a shared signaling for multiple user equipment.

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US 2003/0045288 teaches a method of sending control information in a wireless telecommunications network, and corresponding apparatus.

US 2002/0172217 teaches a multiple mode data communication system and method and forward and/or reverse link control channel structure.

US 2002/0046379 teaches a communication system employing automatic repeat request.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edan Orgad whose telephone number is 571-272-7884. The examiner can normally be reached on 8:00AM to 5:30PM with every other Friday off..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on 571-272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**EDAN ORGAD**  
**PATENT EXAMINER/TELECOMM.**

La 10/31/08